

<b>Project Title</b>
EcoMakala Virunga Reforestation project
<b>Gold Standard ID</b>
GS5618
<b>Type of Certification</b>
<input checked="" type="checkbox"/> Initial Certification <input type="checkbox"/> Performance Certification <input type="checkbox"/> New Area Certification <input type="checkbox"/> Annual Reporting

For each item listed below, please provide a general description in the corresponding box. In total, this document shall not exceed 5 pages. Be aware that carbon market specific terms may not be appropriate for the readers of this summary. The formatting requirements provided in chapter 7.4 must be followed.

## 1. Key Project Information

### (a) Project activities

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In the North-Kivu Region, Democratic Republic of Congo (DRC), the EcoMakala Virunga Reforestation project promotes various activities in order to protect the forests of Virunga National Park (PNVi) and alleviate poverty of the surrounding communities. The EcoMakala project consists of three components:

- 1) Reforestation with fast growing trees
- 2) The introduction of improved cookstoves
- 3) Fuel substitution of non-renewable charcoal by charcoal from renewable plantations (supply of renewable charcoal).

This documents provides key project information about the reforestation project, which consists in plantation of fast growing trees over deforested lands (at least deforested from 1997, i.e. at least 10 years before project start).

One of the objectives of these plantations is the sustainable production of charcoal, which is the main source of energy in the region. In fact, almost 100% of energy requirements in North-Kivu are provided by biomass, either as firewood or charcoal. Biomass comes mainly from non-sustainable sources and even illegal as from the PNVi, to such a point that today, most of forest cover around urban zones of the region has disappeared. With this objective EcoMakala aims not only to increase the forest plantation area in North Kivu province, but also to popularize forestry techniques and improve the productivity of community plantations.

Ecomakala's reforestation activities are promoted by WWF (as implementer of the project) and CO2logic (as carbon project developer) and carried out by the communities involved in the project. Such activities started end of 2007<sup>1</sup>, and intends planting up to around 12,000 ha eligible for GS certification until 2025). Until end of 2016, around 10,000 ha have already been planted of which around 4,264 ha are eligible in accordance with the requirements of the Gold Standard. Detailed information of this project can be consulted in e.g. document 'Evaluation Finale Du Projet Ecomakala', July 2013, O.Bouyer et al. Detailed information about the planted areas can be found in the ER calculation excel spreadsheet.

<sup>1</sup> On 26/10/2007 the first contract between plantation owner (grower) and grower association regulating the terms for reforestation was signed. However, since the plantation corresponding to this first contract has been identified for not being eligible under the GS A/R carbon project and PP decided after a Request received during the GS PFA review to remove all of the plantations realized in 2007 and 2008. 16/02/2009 is considered to be the project start date of the reforestation project. It is on 16/02/2009 when the first contracts between plantation owners and association for eligible plantations realized in 2009 were signed. As mentioned before, plantations realized in the years 2007 and 2008 do not claim carbon credits. PP decided to exclude all those plantations since no baseline tree biomass data is available for those years and data have not been systematically collected with data collection forms, called 'TAR' ('Terres a reboiser').

### (b) Organisations that are involved in the project (project participants)

**WWF** : Created in 1961, the WWF is an international conservation organization, with more than 90 offices in over 65 countries and coordinates projects in over 100 countries. WWF Belgium and WWF Goma are in charge of the EcoMakala Reforestation project, offering financial and technical support to local peasant associations and peasant farmer for the implementation of project activities. WWF initiated the carbon project, and now assists in the implementation of the carbon project activities.

**CO2logic**: CO2logic is a consulting office based in Brussels (Belgium) that supports companies, institutions and other types of organizations towards a low carbon economy. In this context CO2logic develops, in collaboration with local partners in developing countries, carbon projects. This approach makes it possible to channel carbon finance towards development projects mainly in Africa. CO2logic is the project developer and will commercialize the credits which will allow channeling carbon finance to the project for expansion.

mkaarbon safari GmbH provides consultancy to CO2logic. mkaarbon safari GmbH works in the development and consultation of carbon projects and projects beyond. Carbon projects include projects in the areas of renewable energy, energy efficiency, fuel exchange, waste management, agriculture and forestry. Beyond carbon projects cover all kinds of sustainable development projects and include among others the areas of health, WASH, gender.

**Local peasant associations**: They are legally constituted entities that group a certain number of small landowners (growers) interested in reforestation activities.

Associations are responsible for:

- The identification of the land to be reforested, and the selection of peasant farmers
- The production of viable seedlings to be used by the farmers previously identified and selected
- The assurance of the distribution of seedlings to farmers
- The support in the establishment of seedlings in the identified sites
- The monitoring of farmers' activities and reforested plots
- The joint validation of the final results with the WWF team.

**The farmers**: They are small landowners (growers) that, once accepted their participation, they will be responsible of:

- Land preparation for reforestation;
- Plantation establishment
- Maintenance.

### (c) Communities involved in the project

The EcoMakala reforestation project is conceived as a community reforestation project, therefore, many communities in five out of the six territories of North-Kivu province, namely Nyiragongo, Masisi, Rutshuru, Lubero and Beni, are those implementing the project activities and who will benefit from the products resulting from it.

For this, small landowners are organized into associations, which are committed to the WWF to carry out the reforestation activities.

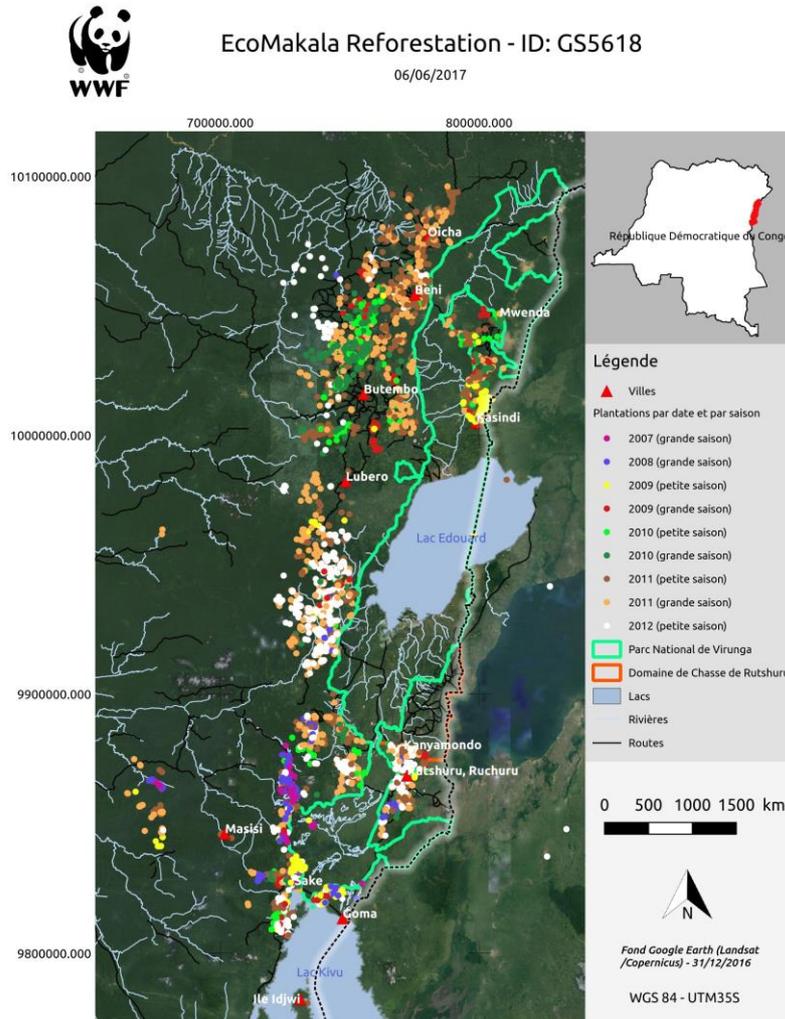
The project since its inception in 2007 has so far involved 76 local peasant associations (see excel spreadsheet 'Partenaires Ecomakala 24042017' with contact details, locations and registry number of the associations), and signed around 3,522 reforestation contracts.

### (d) Location of the project area and the planting area

The project area is located in the province of North Kivu, around the Virunga National Park in eastern Democratic Republic of Congo (DRC). The primary zone of intervention is the charcoal supply basin, around Goma (Masisi, Rutshuru and Nyiragongo); the secondary zone comprises the territories of Lubero, Beni. Below

(d) Location of the project area and the planting area

is an image of the project area. See as well folder 'shapefiles'/folder 'Project area'.



(e) Size of the project area and the planting area

The project area is located in five territories in the province of North Kivu, around the Virunga National Park in Eastern Democratic Republic of Congo (DRC).

The project seeks to reforest up to 20,000 hectares of which up to around 12,000 ha<sup>2</sup> will be eligible for GS carbon certification. Until end of 2016, around 10,000 ha have already been planted of which 4,264 ha are eligible in accordance with the requirements of the Gold Standard. Detailed information about each plantation are provided in the folder 'shapefiles'/folder 'planting area' and ER calculation excel spreadsheet (worksheet 'Projections MU Vol').

<sup>2</sup> The ER calculation excel spreadsheet mentions 11,264 ha, however this figure might be exceeded by around 5% to 10%.

(f) Risk of change to the project area (during the crediting period)

The project area is located in five territories in the province of North Kivu, around the Virunga National Park in Eastern Democratic Republic of Congo (DRC), being the area of action of WWF for a long time. The risk of change to the project area is considered to be minimal since it is very unlikely that the delineation of the province of North Kivu would be changed by the government.

(g) Risk of change to the project activities (during the crediting period)

The risk of change to the project activities is very low since measures are being implemented to allow reducing this kind of risk. Some of these measures are:

- Raising communities' awareness
- Signing reforestation contracts
- Creating a revolving fund in order to perpetuate activities
- Choosing adapted species and improved forest management techniques
- Ensure that that enough land at each plot is kept for agricultural activities or grower has other land plots which ensure agricultural activities. Besides, many of the plantations occur on low fertile agricultural or pasture lands which became unproductive over time (see 19092012\_ONFI\_etude\_environnem entale\_du\_projet Ecomakala.pdf, page 18). Furthermore, EcoMakala project allows agriculture crops in plantations (agroforestry and intercropping) (see 'Normes techniques\_de\_plantation\_V3.pdf')

The reforestation contracts signed between growers and associations regulate the planting, maintenance and harvest practices as well as describes the rights and obligations for the growers for participating in the project. The contracts signed by the associations ensure that the associations (representing the growers) follow all its necessary obligations formulated in the contract, but also receives the necessary funds. The contracts as well as the other aforementioned measures ensure that the project is being in fact implemented as designed and keeps the risks of change to a minimum.

More information is provided in the document 'Evaluation Finale Du Projet Ecomakala', July 2013, O.Bouyer et al.

(h) Timeframe for the project activities

Plantations:

2007<sup>3</sup>: 1<sup>st</sup> year of plantations. Plantations are expected to continue until 2025.

Harvest management:

The time of harvest depends on the strata and option chosen by the landowner. However, the contract between landowner and association prescribes basic rules which have to be followed by landowners. Depending on the strata and model a first thinning might be possible after 3 years or first harvest after 4 years

<sup>3</sup> On 26/10/2007 the first contract between plantation owner (grower) and grower association regulating the terms for reforestation was signed. However, since the plantation corresponding to this first contract has been identified for not being eligible under the GS A/R carbon project and PP decided after a Request received during the GS PFA review to remove all of the plantations realized in 2007 and 2008. 16/02/2009 is considered to be the project start date of the reforestation project. It is on 16/02/2009 when the first contracts between plantation owners and association for eligible plantations realized in 2009 were signed. As mentioned before, plantations realized in the years 2007 and 2008 do not claim carbon credits. PP decided to exclude all those plantations since no baseline tree biomass data is available for those years and data have not been systematically collected with data collection forms, called 'TAR' ('Terres a reboiser').

### (h) Timeframe for the project activities

of one part of the planted area. Natural regrowth and/or replanting of harvested trees will ensure permanent carbon sequestration.

For details please see contract example between growers and association (as well as between association and WWF)<sup>4</sup> and worksheet 'Harvesting schemes' in the ER calculation excel spreadsheet.

The cooperatives, mostly coordinating harvesting activities, will sensitize the growers and charcoal producers in charge of harvesting trees about the harvesting schemes for the different strata.

Crediting Period:

The crediting period will be 36 years starting in 2010 (with first plantations realized in 2009 being included) and ending in 2045.

### (i) Number of (predicted) CO<sub>2</sub> certificates

The yearly average number of predicted cumulated CO<sub>2</sub> certificates after 20% buffer is 812,299.

For details, please see ER calculation excel spreadsheet.

### (j) Land-use history and current situation of the project area

North Kivu has moist tropical montane climate (between 1000 and 2000 mm of rain / year and elevations higher than 1,000 m ) and different land profiles like plains, plateaus and mountain chains.

Soils are usually fertile to very fertile except those from the recent volcanic activities that are non-arable soils.

North Kivu province is recognized not only for its vast forest areas, and the richness of natural resources but also for the high population growth, which has led to radical changes in land use (Languy et al 2006). Perhaps the most detailed study about land use changes in the Nord Kivu is provided by Languy et al. (2006), which shows a huge expansion of human activity, mainly agricultural, since at least 1960. This study shows that the main factors that led to a loss of forest cover around and inside the Virunga National Park (PNVi), have been the population growth, the development of road infrastructure, the displacement of people from rural to urban areas due to armed conflict and the increasing demand of natural resources.

Only the city of Goma, whose surface in 1959 was 4.8 Km<sup>2</sup>, 35 Km<sup>2</sup> in 2004 and 75 Km<sup>2</sup> in 2015, shows an exponential growth, from 550 000 inhabitants in 2004 to 1 million in 2012.

More recently, in the framework of the EcoMakala project, ONFI has conducted two analyses, one of the deforestation (Development of the baseline scenario (file: 20151029 Analyse\_deforestation\_Ecomakala.pdf)) and another of land eligibility for A/R projects (Eligibility analysis of the lands to be reforested (file: 20150928 Rapport\_Detude\_eligibilite\_Ecomakala\_V6)) and the results are alarming. The first analysis was conducted between 1995 and 2006 and shows a deforestation rate in North Kivu of 2.5% per year in this period. The analysis covered an area of 3,500,000 ha (page 9). The second analysis compared forest and non-forest areas existent in the years 1995 and 2006. Eligible planting areas were defined by superimposing the map of areas reforested by the EcoMakala project with the forest/non-forest maps. The shapefiles in folder 'Shapefiles'/folder 'Planting area' show the eligible and non-eligible plantations. Non-eligible plantations are amongst others those where there has been forest less than 10 years prior to project start. According to the criteria established by the DNA of DRC (see <https://cdm.unfccc.int/DNA/index.html>) land is considered as forest when it meets the 3 following criteria: -single minimum tree crown cover of 30%; -single minimum land area value of 0.5 ha and a single minimum tree height value of 3 metres.

In North Kivu, more than 73% of population practice mainly subsistence agriculture (UNDP-CD-Profil-

<sup>4</sup> This includes an example of the initial collective agreement between several independent growers and the association ADICO as well as initial contract between WWF and ADICO as well as the contract amendments reflecting the revised duration of the contract and the revised clause on transfer of carbon credit ownership.

(j) Land-use history and current situation of the project area

PROVINCE-Nord-Kivu.pdf, page 5).

(k) Socio-economic history and current situation

Democratic Republic of Congo (DRC) remains one of the poorest countries in the world with a human development index of 0.29 in 2011 and a very high population's growth rate.

Regarding North Kivu province, the poverty rate is one of the highest in the country, it was about 72.9% in 2005 (UNDP-CD-Profil-PROVINCE-Nord-Kivu.pdf, page 6). The population of North Kivu was almost six million inhabitants in 2010 ([https://en.wikipedia.org/wiki/North\\_Kivu](https://en.wikipedia.org/wiki/North_Kivu)) and a continuous population growth.

Despite the richness of natural resources of the North Kivu province, the historical socio-economic balance is catastrophic, that due to governance problems, wars, looting and illegal exploitation of natural resources worsened by economic decisions (UNDP-CD-Profil-PROVINCE-Nord-Kivu.pdf, pages 5,16).

Households in North Kivu are composed of 5.5 people on average (UNDP-CD-Profil-PROVINCE-Nord-Kivu.pdf, page 5), and their economy is based mainly on small-scale and family farming as already mentioned above. Indeed family farming for food production is the main source of income for over 80% of the population. The main crops are: soybean, bananas, rice, peanuts, corn (maize), potatoes, beans and cassava ((UNDP-CD-Profil-PROVINCE-Nord-Kivu.pdf, page 4 and [http://www.memoireonline.com/10/10/3987/m\\_Strategie-de-croissance-economique-et-environnement-de-linvestissement-au-Nord-Kivu-RDC-perio8.html](http://www.memoireonline.com/10/10/3987/m_Strategie-de-croissance-economique-et-environnement-de-linvestissement-au-Nord-Kivu-RDC-perio8.html))

Basic social needs (water, electricity, welfare, education, health and sanitation) do not have a significant coverage The level of coverage and health care is very low and the individual and collective hygiene measures are poorly enforced (UNDP-CD-Profil-PROVINCE-Nord-Kivu.pdf, pages 10, 15). Water and electricity services is scarce in the three main cities (Goma, Butembo, Beni) of the province and, in some places, they never existed. In particular the energy needs in the North Kivu province are provided primarily by biomass, either in the form of firewood or charcoal, resources coming mainly from natural forest which causes high pressure on natural resources of the area.

The document ONFI 2015a (ONFI 2015a\_20150819 Ecomakala Etude Bois Energie au Nord Kivu - rapport final.pdf, page 23) mentions that 53,600 hectares of forest plantations are necessary to supply the city of Goma, where the wood requirement is: 1,340,192 m<sup>3</sup> per year.

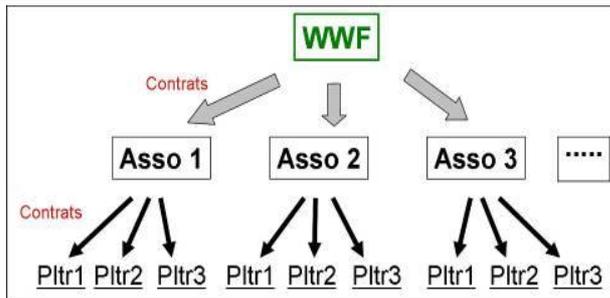
(l) Forest management applied (past and future)

As previously mentioned, severe deforestation occurred in the last few decades in North Kivu and as demonstrated through the aforementioned analyses and shapefiles, eligible planting area have not been forest<sup>5</sup> for at least 10 years prior to the planting start.

Forest management of EcoMakala plantations must follow certain strict rules and meet specific quality standards that are part of both contracts signed by the local farmer's associations (in the following: 'association') and contracts signed between associations and landowners (planters) (see following figure). The contracts signed by the associations determine the forest area to be replanted and include a number of technical conditions to be followed, like alignment and space between plants, reforestation techniques, maintenance and measures to increase the productivity. These conditions are passed on to landowners in the contracts between associations and landowners and are integrated in trainings given to associations and landowners.

<sup>5</sup> A forest in DRC is defined with a single minimum land area value of 0.5 hectare, a single minimum tree height value of 3 metres and a single minimum tree crown cover value of 30% (see : <https://cdm.unfccc.int/DNA/ARDNA.html?CID=241>)

(I) Forest management applied (past and future)



Asso = Association  
Pltr = Planter/grower

The associations are major players in the project. The project will finally work with several thousands of landowners (growers), which would be extremely difficult to work with directly. Local associations are thus an essential intermediary between WWF and the landowners (growers).

The associations are responsible for:

- identification of land eligible for reforestation and selection of landowners (growers) to be validated by WWF
- the production of viable seedlings for reforesting selected lands
- ensure the distribution of seedlings to the participating farmers (growers);
- support in the plantation of seedlings in the identified sites;
- follow-up of growers and reforested plots;
- the joint validation of the final results and the service rendered with the WWF team.

Bigger growers with 5 ha and more of plantations and no intervention from association's side directly sign a contract with WWF.

The main forest management activities are :

**Site selection:** Sites are selected based on several criteria, including: plots without land conflicts, located outside the PNVi, without forest cover, low fertile lands, enough remaining land for agriculture is left and not resulting of natural forest exploitation.

**Site preparation:** selected sites are mostly agricultural, grazing or fallow lands with little or no vegetation coverage, thus site preparation is done manually, eliminating the existing vegetation (however no trees) if any, without disturbing the soil. Before planting, tree position is marked with the aid of sticks, which are located depending on the spacing of planting, which in turn, is between 1001-2500 trees per hectare (2x2m, 2.5x2.5 and 3x3m).

**Nursery:** Prior to the installation of the nursery, training of the technicians is organized in order to guarantee the production of quality seedlings. This capacity building focuses on the development, management of a nursery and reforestation techniques. The local associations are responsible for the establishment of the nurseries and the production of the seedlings, use for this purpose nurserymen who have benefited from training by the project. The associations are provided with a 20% surplus of seeds and plastic bags in order to compensate for tree mortality, in particular in the first few months after planting.

**Planting:** for planting, which takes place in the rainy season, a hole of 40x40x40 cm is dug in the place of each stick, then the seedling it is put in the hole and spaces filled with the soil removed. No fertilization or amendments are done. The associations check/monitor the mortality rate in the first few months after planting and if the same is significant the grower is asked to replant in order to achieve the agreed number of trees per ha.

**Weeding:** Regular weeding is done during first year in order to avoid competition with the surrounding grasses but also applying a mulch around the seedlings to reduce drought risk in dry seasons. As intercropping is allowed to a certain extent<sup>6</sup>, in this case weeding in such plantations is done also in subsequent years to avoid competition between crops and weed.

<sup>6</sup> As long as it contributes to the nurture and maintenance of the plantation

### (l) Forest management applied (past and future)

Firebreaks : They are conducted in the zones most exposed to fire (especially plantations near to fallow or savannas)

Thinning: A first thinning is allowed after three years for certain strata (for more details, please see worksheet 'Harvesting schemes'/ER calculation excel spreadsheet) in order to produce sticks or poles.

Harvesting: harvest for charcoal production (which should represent at least 60% of the harvested wood) can start from the fourth year for certain strata (for others in later years), however it must be ensured that only a part of the planted/regrown area is harvested and that harvested trees either naturally regrow or are replanted (for more details, please see worksheet 'Harvesting schemes'/ER calculation excel spreadsheet). The landowners themselves are responsible for the harvesting. Either they do it themselves or they hire external staff (like e.g. charcoal producers) experienced in tree harvesting activities.

Replanting: For tree species that make new growth from the stump after cut down, coppice system is used, for the others, replanting has to be ensured in order to ensure permanent forest during the crediting period.

The carbon stocks in the planting area will be assessed through forest inventories conducted by WWF staff and/or 3<sup>rd</sup> parties.

### (m) Forest characteristics (including main tree species planted)

As one of the objectives of forest plantations is charcoal production, the project promotes the planting of fast-growing species in high densities (at least 1000 trees per hectare). The species planted are:

*Eucalyptus saligna, maidenii, Senna siamea, Grevillea robusta, Cedrela odorata, Acacia mearnsii.*

To limit any possible negative impacts on water resources it is not allowed to plant eucalyptus or any other species at a distance of less than 20m from a water source or stream.

### (n) Main social impacts (risks and benefits)

The main social impacts, according to the study of socioeconomic impact (ONFI 2012b ONFI=5F=E9tude\_socio=E9conomique\_du\_pro\_=\_jet Ecomakala (projet de rapport final).doc, page 27) are:

The main social benefits are:

The project enables farmers to improve their income with the following immediate impacts: improvement of children's education, healthcare and housing.

Reforestation activities allow: creation of local jobs, access to liquidity, easier access to wood energy (shorter distances), sale of wood products to development organizations like the UNHCR (which supports the construction of temporary shelters in the province).

Furthermore, the project promotes the sustainability of forestry investments through: The establishment of a revolving credit fund, the development of a new method of valuation of the field and capitalization and growers' training.

The main social/socio-economic risks are:

Reforestation produces goods of high interest for communities (firewood, timber, etc) which could result in illegal logging and thus conflicts in the community. The communities themselves have a conflict management in place, hence this risk can be classified as low risk.

Some growers are concerned about the risks related to soil fertility decline due to the use of fast-growing species such as Eucalyptus, however appropriate mitigation measures are measured in template 3.5 (Sustainability monitoring plan).

Some further potential risks are mentioned in the document (ONFI 2012b ONFI=5F=E9tude\_socio=E9conomique\_du\_pro\_=\_jet Ecomakala (projet de rapport final).doc, page 27 ff) which

### (n) Main social impacts (risks and benefits)

are however not major risks in the opinion of the PP and hence not further elaborated here.

### (o) Main environmental impacts (risks and benefits)

As for social impacts, environmental impacts were assessed (ONFI 2012a FONFI=5F=E9tude\_environnementale\_du\_proj\_ =et Ecomakala (projet de rapport final).doc, pages 34 ff).

The main environmental benefits are:

- In terms of soil, the forest plantations lead to stabilization of soils and fight against erosion, and soil restauration in case of degraded soils and thus, protection of watersheds. Improving soil fertility by enriching nitrogen due to leguminous species.
- Plantation forests have a "filter" role in the water cycle, helping to improve the quality of stormwater runoff, reducing surface runoff, increased infiltration into the soil and evapotranspiration.
- Regarding biodiversity forest plantations promote recolonization of the buffer zone of the PNVI by animal biodiversity (especially mammals and avifauna) and vegetal (undergrowth species) and an indirect effect of limiting illegal logging and poaching in the Park.
- Forest plantation lead to renewability of wood resources of the buffer zone, and contributing to the capture of carbon dioxide.

The main risks are:

- Risk of soil acidification by Eucalyptus litter, particularly on non-volcanic soils. Risk of loss of soil fertility in connection with the short rotation periods.
- Pressure on water resources caused by the fast-growing species such as Eucalyptus
- Risk of fire, especially in young plantations (between one and two years old) which are more susceptible to fire since grass remains between tree lines.

Mitigation for the first two risks are mentioned in template 3.5 (Sustainability monitoring plan) while mitigation for the risk of fire is mentioned in template 3.6 (Risk register).

### (p) Financial structure

The total cost of the project taking into account the full costs is around 767 euros per hectare. This cost is partly financed by WWF and in order to guarantee project continuity, a revolving capital fund was created, by which grower must give 20% of the first harvest to the association. Once the 20% is returned, forest plantation is the integral property of the grower and represents a significant capital to sustainable production. The association has in turn, the contractual obligation to reinvest the values acquired in reforestation of additional areas with other growers, according to the EcoMakala model.

Technical (training, advice and control) and financial support (payment in cash per hectare planted, and supply of seeds and materials) are provided to the growers.

The allocated budget for plantations of less than 5 ha, is 250 USD per hectare achieved according the standards of the EcoMakala project, distributed as follows:

- 150 USD per hectare for the local association and
- 100 USD per hectare for the grower, which has signed a contract with the local association.

For plantations greater than 5ha and having an intervention by the association, the allocated budget is 200 USD per hectare achieved, distributed as follows:

- 100 USD per hectare for the local association and
- 100 USD per hectare for the grower.

## (p) Financial structure

For plantations greater than 5ha and without any intervention from an association, the allocated budget is 175 USD per hectare achieved and completely assigned to the grower. In this case a contract is signed between WWF and grower.

For one season (2013) the amount paid to growers was slightly different (75 USD). The payments might change in future.

Given that the initial donations/grants have not been enough, other financing sources are needed, including the carbon emission reduction credits to upscale the project.

## 2. Shapefiles

Please provide *shapefiles* in the *supporting documents* and provide a reference to these *supporting documents* in this template.

### (a) Project area

The project area of EcoMakala Virunga Reforestation project comprises of five out of six territories in North Kivu (see folder 'shapefiles'/folder 'project area'). The territories included are Lubero, Rutshuru, Masisi, Nyiragongo and Beni.

### (b) Planting areas

A shapefile of the planting areas is provided in folder 'shapefiles'/folder 'planting area'/folder 'Plantations\_Eligibles'. Another shapefile (folder folder 'shapefiles'/folder 'planting area'/'Plantations project') includes both eligible and non-eligible plantations.

### (c) Eligible planting area

A shapefile of the planting areas is provided in folder 'shapefiles'/folder 'planting area'/folder 'Plantations\_Eligibles'.

A shapefile with a forest/non-forest map for 1995 and 2006 is provided in folder '1995\_2006\_2007\_shape.zip'.

### (d) Modelling Units

Modelling Units are defined taking into account the different strata (strata are defined taking into account the different 6 species and 3 different planting densities) and planting years (from 2009 to 2025). However, it would have been too cost and work intensive to create shapefiles for each of the 272 modelling units.

Further, it is very likely that the modelling units will change after the pre-inventories<sup>7</sup>/inventories since a re-stratification and merge of several planting years is very probable. Hence, the PP does not consider it as essential and reasonable to have different shapefiles for each of the modelling units.

A shapefile with polygons of all the plantations included so far in the project can be found in the folder 'shapefiles'/folder 'planting area'/folder 'Plantations\_Eligibles'.

### (e) Infrastructure (roads, houses, etc.)

<sup>7</sup> 10 plantations will be randomly selected from each strata for the pre-inventory. If there are less than 10 plantations in a strata, an inventory of all available plantations in this strata will be carried out provided that they are accessible. In general, if plantations are not accessible due to security reasons, the subsequent plantation in the randomly generated list will be selected.

(e) Infrastructure (roads, houses, etc.)

Shapefiles on infrastructure can be found under the folder 'shapefiles'/folder 'Infrastructure'.

(f) Water bodies

Shapefile on water bodies can be obtained under folder 'shapefiles'/folder 'Water bodies'.

(g) Sites with special significance for indigenous people and local communities - resulting from the Local Stakeholder Consultation (LSC)

Sites with special significance in Nord Kivu correspond to protected areas (in this case Virunga National Park), whose information is in folder 'shapefiles'/folder 'PARK\_LIMITS'.

(h) Where indigenous people and local communities are situated

The shapefiles under folder 'shapefiles'/folder 'Villages Pygmées' show where indigenous people (Pygmées) are located.

(i) Where indigenous people and local communities have legal rights, customary rights or sites with special cultural, ecological, economic, religious or spiritual significance

Sites with special cultural, ecological, religious significance coincide with protected areas and areas where indigenous people are situated, so shapefiles are the same as for section (g) and (h) above.

### 3. Boundaries

Please provide evidence that boundaries of the project area and the planting are clearly distinguishable in the field.

Forest plantations of EcoMakala project are located on lands whose previous use was agriculture, grassland or fallow. The boundaries of those plantations are clearly distinguishable because plantations bordering lands are still agriculture lands or grasslands/fallow. Further, the border lines between different plantations can be clearly identified and recognized by plantation owners, associations or community chiefs by e.g. corridors or other border markings mutually agreed between different landowners.

The shapefiles (folder 'shapefiles'/folder 'project area' and folder 'shapefiles'/folder 'planting area'/folder 'Plantations\_Eligibles') clearly demarcate the polygons where the plantations have been realised.